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Sweet Potato: Its Nutritional Factor and Health Benefits

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Abstract

Ipomea batatas (L.) commonly known as Sweet potatoes are considered as the second most staple food crop in many developed and underdeveloped countries due to its immense role in human diet. The different coloured flesh of sweet potatoes found naturally as white, yellow, purple, and orange are rich of nutrition. The orange-fleshed sweet potato has been set as a centre of attraction among many food technologists and nutritionists due to its high content of carotenoids and pleasant sensory characteristics with color while the purple fleshed sweet potato is full of anthocyanin content. Due to various health benefits reported in orange sweet potato, most of the countries like Uganda, Mozambique, Kenya, and Nigeria use orange-fleshed sweet potato used as their staple food. Sweet potato is the most amply grown tuber crops in Africa. Sweet potato is considered to be the principal source of natural products and development of medicines against variable diseases including production of industrial products.

Introduction

Sweet potato (*Ipomea batatas* (L.) belongs to family *Convolvulaceae*, a resourceful and appetizing vegetable which contains high nutritional value. It was originated in Central America is now extensively cultivated and consumed throughout the world. China is the leading producer of sweet potato followed by Nigeria and Tanzania, Indonesia, and Uganda. The production and consumption of sweet potato in Africa, Asia, South American continents, and Caribbean islands are increased tremendously in recent times. In India, a total stock of 36 improved sweet potato varieties has been released for cultivation in Kerala, Andhra Pradesh, Maharashtra, Orissa, Jharkhand, Chhattisgarh, Bihar, Assam, West Bengal, Karnataka, Tamil Nadu and North Eastern region (Chauhan *et al.*, 2021). Out of 36 varieties, six varieties (BhuSona, BhuKanti, BhuJa, Gouri, Kamala Sundari and CO-5) rich in carotene content and highest carotene content found in variety BhuSona (14.0 mg/ 100 g). Sweet potato variety Bhu Krishna is a rich source of anthocyanin's (Pati *et al.*, 2021).

Systematic Position of Sweet Potato

Kingdom: Plantae

Division: Tracheophyta

Subdivision: Spermatophyta

Class: Magnoliopsida

Order: Solanales

Family: Convolvulaceae

Genus: *Ipomea*

Species: *batatas* (L.) Lam.

The sweet potato plant is an herbaceous perennial vine, bearing alternate heart-shaped or palmately-lobed leaves and medium sized sympetalous flowers (Figure 1). The edible tuberous root is long and tapered with smooth skin. It is considered as the food security crop due to its low agriculture input requirements and high yields in wider climatic conditions (Ziska et al., 2009). This crop is recently changing from a sustainable low-input, low-output crop to a significant cash crop. It is valued for its short growing period of 90 to 120 days, high nutritional content and sweetness. It is a major conventional crop, growing traditionally in limited area for domestic consumption purpose. The sweet potato is praised as a “poor man’s crop” as it characteristically grown and consumed by inadequate communities especially by women-headed families (Ndolo et al., 2001). As a food security crop, it can be harvested at the point of demand as gradually (Tairo et al., 2005), also contributing to a reliable source of food and revenue to pastoral farmers who are frequently susceptible to regular crop damages. The sweet potato possesses medicinal qualities which contain anti-diabetic, anti-cancer and anti-inflammatory properties which play chief role as an energy and phytochemical source in human nutrition. In regions of Japan, Kawagaa variety of sweet potato has been eaten raw to treat anemia, hypertension and diabetes.



Figure 1: Tuberous root of sweet potato

Nutritional Factors of Sweet Potato

The Sweet potato is a magnificent source of vitamin C, vitamin A and potassium. The Orange-fleshed sweet potato is rich in beta-carotene whereas the Purple-fleshed are richer in anthocyanins (Figure 2). The sweet potato

(180 g) provides various nutritional compounds which are healthful for consumption are listed below:

- Energy: 162 kcal
- Fat: 0.1 g
- Sodium: 71 mg
- Carbohydrates: 37 g
- Fiber: 3.9 g
- Sugars: 5.4 g
- Protein: 3.6 g
- Vitamin A: 730 mg
- Vitamin C: 35.3 mg
- Potassium: 855 mg



Figure 2: The beta-carotene rich orange fleshed sweet potato (A), Anthocyanins rich purple fleshed sweet potato (B)

Health Benefits

Sweet potato may offer a variety of health benefits. Here are some of the ways in which they may be beneficial to a person’s health:

- *Improving digestion and regularity:* The fiber content in sweet potatoes can help prevent constipation and promote regularity for a healthy digestive tract.
- *Protects Vision:* Beta carotene, which is essential for eye health, is plenty in sweet potatoes. Eating foods rich in beta-carotene, such as orange-fleshed sweet potatoes, may help prevent this condition. Purple sweet potatoes also known to have vision benefits.
- *Supports Cardio vascular health:* The anthocyanins present in sweet potatoes are also associated with anti-inflammatory effects that reduce the risk of heart disease. Additionally, the fiber in any vegetable reduces cholesterol, while the high potassium levels of sweet potatoes keep blood pressure down.
- *Reduced oxidative damage and cancer risk:* Diets rich in antioxidants, such as carotenoids, are associated with a lower risk of stomach, kidney, and breast cancers. The sweet potatoes potent antioxidants may reduce your risk of cancer. Purple potatoes have the highest antioxidant activity.

Sweet potatoes are rich source of vitamin A and potassium. They also provide some calcium, iron, magnesium, and folate (Pati *et al.*, 2021). The health benefits of vitamins and minerals present in sweet potato are as follows:

- **Vitamin C:** This antioxidant may decrease the duration of the common cold and improve skin health.
- **Potassium:** Important for blood pressure control, this mineral may decrease risk of heart disease.
- **Vitamin E:** This powerful fat-soluble antioxidant may help protect your body against oxidative damage.
- **Vitamin B6:** Plays an important role in the conversion of food into energy.
- **Vitamin B5:** Also known as pantothenic acid, this vitamin is found to some extent in nearly all foods.
- **Manganese:** This trace mineral is important for growth, development, and metabolism.

Conclusion

Sweet potato is an important tuber crop which plays a very important role in food and nutritional security worldwide. It is a rich source starch, beta-carotene, anthocyanins and micro nutrients. Sweet potato is a low-calorie, fat-free, nutrient-dense source of healthy carbohydrate, fiber, and many vitamins and minerals including vitamin A, potassium, and vitamin C will make a significant commitment to the food security and occupation improvement of destitute individuals.

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